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ABSTRACT

In this paper the author relates her experiences as an advisor to elementary school teachers on the subject of building curriculum. The philosophy expressed in her narrative is that learning begins when children seek the answers to their own questions and that curriculum can be developed out of children's immediate environment. The teacher must become a diagnostician who observes the child, listens to the child, takes cues from the child, and then plans for the child's progress in learning. Field trips and exploration of the community and environment arouse interest and curiosity in children. From this beginning point, the teacher can build a flexible curriculum incorporating the basic skills of reading, writing, and mathematics into a learning experience that relates to the world outside the classroom. The enthusiasm and interest of the teacher is of great importance to this method of teaching. The feeling of learning with the children rather than "teaching" them helps the teacher to grow as an individual and a professional. (JD)

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A PERMANENTLY TENTATIVE CURRICULUM

Maja Apelman

To the teachers in Boulder
who have allowed me to learn
in their classrooms.

U S DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
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"From the standpoint of the child, the great waste in the school comes from his inability to utilize the experiences he gets outside while, on the other hand, he is unable to apply in daily life what he is learning in school. That is the isolation of the school--its isolation from life."

John Dewey in School and Society

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A PERMANENTLY TENTATIVE CURRICULUM

Maja Apelman

What is curriculum? How is it developed and who should be developing it? My views on curriculum evolved gradually over a period of some 20 years and have been shaped by my childhood school experiences, my professional training at Bank Street College of Education, and my work as classroom teacher, college instructor, and advisor of teachers in early childhood education. Two people have strongly influenced my thinking. The first was Lucy Sprague Mitchell, founder and later president of Bank Street College, where I studied and also taught for many years both in the children's school and in the college. Mitchell retired the year I began my studies there, but her close associates were my teachers and later my colleagues. The second person is David Hawkins, director of the Mountain View Center for Environmental Education in Boulder, Colorado, a resource center for preschool and elementary school teachers, where I have been working as an advisor for almost six years.

Both Mitchell's and Hawkins' educational theories lead me back to John Dewey. Mitchell told how as a young girl in her father's house in Chicago, she first met Dewey: "Dewey gave me my first conception of experimental education. His influence on my thinking lasted from these youthful years on. It was in a large measure his influence that determined my interests and choice of a profession in later years" (1953, p. 74). Hawkins has repeatedly written about Dewey's importance: "No one today . . . can discuss education well without acknowledging that

Dewey has been there already . . ." He laments the fact that Dewey's influence on educational theory and practice has been almost negligible: "In my own view the correctness of Dewey's major position in the theory of education is, or ought to be, beyond dispute" (1974, p. 162).

What Mitchell and Hawkins took from Dewey's philosophy, how they developed his thinking and how they applied it in their own work with teachers and children, interests me very much. Here, however, I want to focus only on one theme: how Dewey, Mitchell, and Hawkins viewed curriculum and how they saw the role of the teacher in curriculum development. Their views provide the foundation for my practical work with teachers--the topic I shall discuss and illustrate later.

Dewey defined cirruculum as "the formulated wealth of knowledge that makes up the course of study" in schools, and he stressed that its primary value was "for the teacher, not for the child" (italics mine). Knowing the content of the various subjects traditionally taught should enable the teacher "to determine the environment of the child and thus, by indirection to direct" (1902/1971, p. 31).

Mitchell proposed a method of curriculum building for social studies that used as its main foundations a knowledge of children and a knowledge of the environment. The teacher's job is "to place the children in strategic positions for making explorations" (1934/1963, pp. 25-26). Curriculum material, she said, must be "permanently tentative . . . A fixed curriculum is an anomaly if we consider children and environment two of the cornerstones upon which a curriculum is built" (1951, p. 197).

Hawkins stated that teachers need to restructure their own understanding of subject matter to make it easier for different children to

become interested and to offer children greater options for learning. Teachers, he said, must organize subject matter "for maximum accessibility /so that/ it is easy to get into it from many, many directions, from many starting points and many levels of comprehension and insight" (1975, p. 15). In the view of all three writers, then, curriculum is fluid, though never unplanned, and teachers are responsible for developing it. "To teach", said Hawkins, "means to facilitate learning by surrounding the child with, and helping him into, situations where learning can take place" (1974, p. 18).

I too believe that teachers must be involved in the process of constructing their own curriculum, but I know that it is a difficult and demanding task and that teachers need ongoing help and support if they are to learn to do it well. In my present job as advisor, I try to give this support to practicing teachers. But before discussing my work, I want to describe briefly my own development as a learner to show how I obtained some of the knowledge and skills that I consider basic to this work.

My Development As A Learner

My experience as a student has been long and extremely varied. It stretches from an excellent first-grade classroom in Vienna during a period of educational reform (see Hein, 1975, pp. 112-118) through an incredible assortment of public, private, and boarding schools in four European countries to my American university education in two colleges and three graduate schools. I left a typical Austrian "Gymnasium" at the age of 15 (Hitler made that easy); hating what I considered useless,

irrelevant rote learning of subjects that did not interest me. After two years in England, one of them spent at Summerhill School, I decided to try college when my family emigrated to New York. There I was able to choose my subjects and consequently I began to enjoy learning. I have not stopped enjoying it.

My first adult contact with the field of education was at Bank Street College, where a thorough understanding of young children's growth and development was central to teacher training. Therefore, I cannot think about curriculum without thinking about children. At Bank Street College I first learned about children in general, how they feel about themselves, their families, and the immediate world in which they live. I learned to observe children closely in the classroom, to listen to their spontaneous language, to value their work with materials, to respect their thinking, and to enjoy their curiosity. Above all, I learned not to expect all children to develop at the same rate and to accept the ups and downs of normal development in any one child.

Bank Street College's School for Children was not perfect, but it was truly a school <u>for</u> children. No one laughed at children though there was much laughter with them. No one talked down to children. All the adults--from janitor and cook to college and research staff--genuinely enjoyed children and treated them with consistent respect. In many school settings there is a large gap between child development theory and existing classroom practices. Relatively few education students have the opportunity to study in a setting that allows them to develop the kinds of attitudes toward children that at Bank Street College formed the basis for all subsequent studies.

After beginning to learn about children in general, I learned to look at children in specific ways. What do invidivual children bring to school with them from past experiences? What is their socioeconomic background? What are the values of their families? What geographic settings have they lived in? How many siblings do they have? What events in their own brief history might have affected them in ways that teachers should know?

Mitchell believed that schools should begin where children are and build a curriculum for their growth from that point. The world in which young children live, their physical and social environments, provide the content from which teachers select activities and materials appropriate for children's learning. "Since children's experiences begin in the immediate communities in which they are brought up and since these communities are functioning in terms of the present day culture, it is the school's job to begin with the children's own environment whatever or wherever it may be. The complications of the surrounding culture, instead of making this attack impossible, make it imperative" (1934/1963, p. 16).

How should young children study their environment? Mitchell placed her emphasis on the human aspects, on people's work. Children's interest in action and movement made this a natural focus. From studying work done in children's own homes, to watching work in their immediate neighborhoods, to exploring and understanding the larger "city housekeeping" of New York, to finally learning about work performed by other groups "long ago and far away," children would gradually expand their understanding of what Mitchell called human geography--"what the

earth does to people and what people do to the earth":

> . . . everywhere people are working . . . everywhere /they are/ using the earth . . . in their daily lives. Children everywhere are eating food which came from the earth . . . They are wearing clothes which, like food, workers somewhere have made through their work from some living things. They are living in houses built of earth materials, using machines made from underground deposits, moving over the surface of the earth on some kind of road, and using some method of communication with other people near or far away. These are basic patterns of our culture and of the culture of any people. The "hows" that lie behind these patterns of work interest children of all ages . . . (1951, p. 49)

In a curriculum based on studying the environment, children must be able to go out of the school. Mitchell considered field trips the basis of the curriculum in the years from about four to seven when children feel secure enough in their home environment to move out into their neighborhood and community but are not yet ready to "carry on investigations in situations which are not immediately before them" (1934/1963, p. 22).

Bank Street College was located in Manhattan. The School for Children and others like it used the city as their lab. Trips to see coal delivered to homes and schools would be followed by trips to the river to watch barges pulled by tugboats bring coal and other raw material to the city. Visits to neighborhood grocery stores preceded trips to wholesale produce markets where farmers came to sell their wares. On trips to bakeries or shoe repair shops children watched closely how some of their needs were taken care of, and at the same time they enjoyed the sights, smells, and sounds that go with this work. There are always machines in New York streets--diggers and loaders, cement mixers and cranes, sweepers and garbage trucks and snow plows, all performing work for the people of the city.

Students at Bank Street College were expected to become "human geographers" and to explore and study their own environment. We took many field trips--to the Fulton Fishmarket at 5 a.m., to huge incinerators that burn the city's tons of daily garbage, to produce auctions and construction sites. In earlier days, students went as far as the Tennessee Valley Authority to study how such a gigantic project affected the land and people of that region.

Social studies, defined broadly as man's relation to other men and man's relation to his environment, was the core of the curriculum at Bank Street College. Mitchell had a strong commitment to democratic ideals and a deep sense of social justice. She expected teachers to develop a social philosophy that would guide them when they planned a curriculum for children. Teachers needed to think about the kind of world they wanted children to live in and how they could best prepare children for such a world. Social thinking started in the classroom: A good group life was the foundation from which a gradual, more mature understanding of varying family patterns and different cultures would grow. Cultural patterns, however, were always related to the environment that shaped them, and Mitchell always stressed the importance of a basic understanding of how the world functioned: The young child, she wrote,

> lives in a world of end-products with the functioning causes largely concealed. He is likely to grow up so used to unexplained end-products that he does not form the habit of seeking for causes, for underlying relationships . . . he is likely to grow up without thinking, without opportunity for experimentation . . . without understanding or even questioning familiar things . . . /If/ the grownups closely associated with these modern children . . . accept their environment with an attitude almost equally unchallenging . . . children will have as little chance to explore their surroundings /or/ to pursue a laboratory method in their classrooms as in their homes. (1934/1963, pp. 12-14)

Science obviously played an important role in Mitchell's thinking. Yet in practice, at least in the progressive schools that I knew in the '50s and early '60s, science did not receive sufficient emphasis. Although most early childhood classrooms had plants and animals, water, sand, and blocks, and children cooked, modeled maps, and worked with clay and wood, the science learning possibilities inherent in these materials and activities were not sufficiently developed.

In my kindergarten classroom I brought in things from the natural world--leaves and shells and rocks--and I had materials to study physical forces--magnets, batteries, and thermometers. I studied science curriculum guides and learned science from children's books. In my own life I love the outdoors, mountains, beaches, forests, and I had learned to look closely at nature when I took walks with my young son. But not until I went to Boulder to work at the Mountain View Center did I discover what science was really all about.

A new world opened up to me. The discovery jolted me, then left me feeling deprived--for having lived so many years without even knowing what there was to know. As Mitchell said, I had lived in a world of end-products. I don't know when I had stopped asking questions about things in the world, but at Mountain View Center I soon began to ask again. I would get exhausted. There was too much to learn. I was greedy and wanted to know it all, but my mind could not absorb so much and I had to "ration" the intake from my immediate environment. (The activities at Mountain View Center cover all subject areas, but science is particularly strong. Because it became my new interest, I will use examples from science to illustrate my points.)

Science at Mountain View Center

Science is defined broadly at Mountain View Center and includes all natural phenomena that occur in the environment. To help teachers learn about these phenomena the Center has created an environment richly stocked with a large variety of materials. There are materials that will lead to investigations of sand, rocks and water, air and heat, balance, symmetry, light and color, growth, form and patterns--in nature, in mathematics, and in art. These are some of the topics that Hawkins sometimes calls "universal" in the sense that they seem to engage the interest of children at all ages and in all places if presented in an accessible and open-ended way.

At Mountain View Center, materials are arranged and displayed in a way that invites handling and experimentation. For exploring the properties of water, there are siphons and syringes, valves and plastic tubes objects to put into water (marbles, gravel, sand) containers to hold water, food coloring to trace the flow of water, T-joints that will stop or divert the flow, and so on. For work with balancing, there is a room full of materials--homemade fulcrums, boards of various lengths and shapes, heavy and light blocks, washers of all sizes to balance with, yardsticks and wire hangers and Tinkertoys. We have large quantities of vinyl tiles cut into many geometric shapes, marbles, poker chips, wooden cubes, and golf tees with pegboards--all for creating patterns. We look at artichokes and sunflowers to study nature's spiral designs, and we get involved with the physics of sound and the mathematics of weaving. Hawkins "infects" the Center and its staff with his scientific interest and knowledge.

Why is there such a wealth of materials and why are they presented in such an open-ended way? Dewey said:

> the fundamental fallacy in methods of instruction lies in supposing that experience on the part of pupils may be assumed. What is here insisted upon is the necessity of an actual empirical situation as the initiating phase of thought. The fallacy consists in supposing that we can begin with ready-made subject matter of arithmetic, or geography, or whatever, irrespective of some direct personal experience of a situation . . . the first stage of contact with any new material, at whatever age of maturity, must inevitably be of the trial and error sort. An individual must actually try, in play or work, to do something with material in carrying out his own impulsive activity, and then note the interaction of his energy and that of the material employed. (1916/1966, p. 153).

As you interact with materials in your own way and raise your own questions, you may find that your questions do not have easy answers; they may touch fundamental problems. Hawkins calls them "elementary" problems: " . . . you are looking at the elements and the elements are deep . . . The elements are not simple. They are not the things you learn first. If they were, you could start out with Euclid's axioms and all the rest would be easy" (1975, p. 12).

The kind of elementary problems that teachers struggle with at Mountain View Center was discussed by Hawkins when he addressed a group of scientists at the Massachusetts Institute of Technology. He criticized the way science is "popularized" for the lay person and suggested instead, a "radical reconstruction of the organization of scientific knowledge, a reconstruction designed to make science maximally penetrable from outside, to make it more readily accessible either by minds whose powers are first developing or by minds which have developed in patterns other than those now deemed apt for science" (1976, p. 16). Hawkins talked

about the "almost irretrievably elementary stumbling blocks" that often prevent the scientifically "innocent" person from understanding standard scientific explanations. Here is an example from my own experience:

A group of teachers, out with Hawkins, had noticed sunspots when the sun filtered through the leaves of a tree. The spots on the ground were all round. Later, Hawkins tried to explain this sun image to me with the help of a diagram. Here is what I wrote in my notes:

> While David is talking, I sort of get it, but then it's gone again. I realized why his explanation didn't really help: what David took for granted as foundation knowledge hasn't even entered my thinking about the sun. On his diagram, the sun is connected with the objects to which it gives light by lines which stand for "rays" or "lightwaves." On paper I can accept that. But when I look at the real sun up there in the blue sky, it would never occur to me to think of rays that go from the sun to objects on earth. There is absolutely no connection in my mind between the diagram and what I perceive in the real world.

How does the Mountain View Center try to help teachers overcome these elementary stumbling blocks? One way is to have a staff interested in the problems of beginners of all ages. Staff members use the wealth of the Center's materials and their own expertise to help those who want to learn. I said earlier that the Bank Street School was <u>for</u> children. In the same way, Mountain View Center is <u>for</u> adults. There are no stupid questions. The burden is on the expert to try to figure out why an individual does not understand something, just as in schools the burden should be on the teacher when a child has trouble with learning. In the way the Mountain View Center provides for science, organizes and presents materials, and supports adult learning, teachers can begin to see how this approach might also work for children.

As early as 1902, Dewey criticized schools for "fractionizing" the

child's world and imposing an organization on subject matter that is contrary to the child's way of thinking and learning:

> Classification is not a matter of child experience; things do not come to the individual pidgeonholed . . . The adult mind is so familiar with the notion of logically ordered facts that it does not recognize--it cannot realize--the amount of separating and reformulating which the facts of direct experience have to undergo before they can appear as a "study" or branch of learning . . . The studies as classified are the product of the science of the ages, not of the experience of the child. (1902/1971, pp. 6-8)

What happens when a child is presented with subject matter already put into logical order by the adult? Hawkins compared the structure of the traditional text or curriculum guide to a ladder: You can only go one way, in one direction. Such programmed learning "reduces human differences, qualitative and many-dimensional, to differences in the rate of climbing ladders" (1974, p. 184). Much of what goes under the name of individualized instruction today is individualized only in the rate at which it allows each child to progress. The content and order of the studies are fixed. Hawkins likened a more open structure to a tree where learners have many paths and choices available to them as they gradually make their way to the top. They can enter at different points, go up, out, or back to the center again, linger with pleasure on a shady branch (even build a small tree house for rest and reflection), or respond to the challenge of lofty upper branches. "The most powerful learning mechanisms available to us are built in, biologically rooted mechanisms of search and exploration . . . " (1974, p. 185). As long as schools limit children to study within the narrow paths of prescribed curricula, much, if not most of this drive to learn--so evident in the very young--will go to waste.

When you learn by climbing ladders, your learnings tend to remain isolated. There are no connections from one ladder to another. In a course on cooking that I was teaching with a scientist colleague, we got onto methods of food preservation. I could recite them well: drying, smoking, salting, pickling, canning, freezing, and so on. But I had never realized that all these methods have one common aim: to prevent bacteria or molds from growing on the food. I wrote in my notes:

> I suddenly realized that I had never made that connection. Food preservation is one topic to be studied. Why do you preserve food? So it won't spoil. What does spoiling mean? It means food goes bad, smelly, soggy, mouldy, sometimes hard and sometimes soft. Then there are bacteria. What are they? I don't really know what they are, but I do know where they are: in a different compartment in my head from food preservation. The two have never met . . . .

Nor had I ever wondered what these different methods had in common. If you don't know how bacteria live, you don't connect the fact that drying, smoking, or salting all take out the water from the food, and without water, bacteria and molds cannot live. In a tree these things get connected; on ladders they remain separate.

How is it that I had never thought that cultivated plants have any relation to wild plants? How is that I never wondered where guinea pigs come from originally? I had seen them in classrooms and pet stores and knew they were used in labs, but not until a youngster in school asked me why guinea pigs are born with fur whereas rats are born without it did I find out that they had a natural habitat! We are not taught to think this way in school, and we do not keep our early curiosity about the world.

Most schools believe that a course of study, arranged in an orderly fashion, makes it easier to "teach" children and helps to transmit knowledge.

But learning, as we should know if we heed our own experiences, is seldom orderly, at least not in its initial stages. "The tight formulation and logical sequencing must be learned", said Hawkins, "but they cannot be learned first. . . What comes first is absorption in subject matter. No one learns by being led blind along a path he cannot begin very soon to see for himself" (1974, p. 15).

What changes are necessary if even the best curriculum worked out by adults for children does not catch the interest of many of the children? As I stated earlier, I believe the teacher has to take the final responsibility for the curriculum. The teacher must become a diagnostician who observes the child, listens to the child, takes cues from the child, and then plans for the child's progress. That is how I think curriculum should be developed. Many resources must be available to teachers to help them grow into this role. One of these resources should be inservice education.

Inservice Education and Mountain View Center

Mountain View Center provides different kinds of inservice education to teachers. Those who take advantage of what we have to offer do so of their own accord. They can register for one of our workshop courses (we run two sets each year and an intensive two-week summer course); they can come and consult with any one of the staff about some specific question or problem; or they can ask a member of the staff to observe or work in their classroom. Not all staff members have had classroom experience: We are a mix of people with expertise in one or two subject areas--specialists--and people who have been classroom teachers--generalists. The specialists teach courses and go into classrooms, but mostly

to initiate or help with an activity relating to their specialty (e.g., botany, art, or mathematics); the generalists also teach courses in special subject matter areas, but they spend more time in classrooms and help teachers with all school matters--organization, planning, special children, and so on. Generalists may use the help of specialists. I believe we are most helpful when we work together as a team.

One of Mountain View Center's basic beliefs is that teachers must have extensive opportunity to learn about subject matter at their own adult level. Workshops, therefore, are not always geared to what is immediately useful in the classroom. In order to grow as professionals, teachers need a chance to explore and learn about things that interest and absorb them. Because you do your best teaching when you are "turned on" about what you teach, it seems logical that the wider the range of subjects that interest you, the greater the choice that you can offer to students. ("It's really important for me to be excited about what I'm doing," a teacher told me recently. She had taken her first graders to a farm, but since she was not very interested in the subject, nothing much happened in the classroom after the trip. Later, when she took the children to a brick factory, she herself was very interested, and the subsequent classroom activities were varied and rich and lasted for many weeks.)

To help others learn, you have to be in touch with your own learning. My struggles with science at the Mountain View Center were invaluable to me, not only because I became more knowledgeable about science, but also because I became aware of my own learning style. That helped me understand better how others might learn. I found out what interfered with my learning and what helped me to learn, how little tolerance I had for

disorder and confusion, how competitive I could be, and how I sometimes needed to retreat because I was afraid someone might tell me what I wanted to find out by myself. When I was close to understanding something but couldn't quite "get it," I would become incredibly frustrated. At one time, a new discovery so unsettled me that I had to dismiss it from my mind. Teachers at Mountain View Center find out similar things about their own learning. We hope this makes them more sensitive and responsive to different learning patterns of children in school.

When teachers get confused at Mountain View Center, they tend to become more tolerant of children's confusions. In the cooking course, mentioned earlier, we all got confused one day. We were going to investigate milk and milk products. I had purchased regular and skimmed milk, half-and-half, and heavy cream. After talking about the weight of water, R. asked the group: "How much does a gallon of milk weigh?" Teachers weighed the milk and were surprised to find that it weighed less than water. The findings didn't fit into my logic, a logic shared by many of the teachers.

> We think of water as something neutral, not quite "nothing" like air, but with a little bit of that "nothing quality." Water is water, milk is something. It consists of the neutral liquid of water plus something else, color and texture. If anyone asked about comparable weight, you would say milk is heavier than water because if you take something neutral and add to it, there will be more. Cream has more butterfat (more color, more texture) and therefore should be even heavier. Skim milk with the least butterfat should be the lightest. That the thick cream weighs less than the thin milk is most confusing.

Experiences like these help to remind teachers how difficult new learning can be, and they become more sensitive to and accepting of children's confusion.

When teachers first come to Mountain View Center to take courses, expecially during the summer when all the staff members work together, they can get overwhelmed. We introduce them to a new way of thinking, a new way of asking questions and seeing relationships, a new way of looking at the world. Last summer after a teacher described his efforts to understand air pressure, he added: "I don't fully understand it but at least I think I know what it is about, this process that I don't fully understand." Struggling with new, difficult concepts is an important stage in learning. Over the years, my attitude has changed from a frustrated "Why can't I understand this?" to a much more relaxed "Ah, that's what this is all about, I see. Now I know where to go and what to do when I want to understand this more." I try to help teachers make this shift when they become frustrated. When they say to me, "I don't know anything, how can I teach this way when I am so ignorant? There is just too much to learn," I tell them to look at it differently: "How exciting that there is still so much to learn. I shall never run out of ideas for teaching and I can be learning for the rest of my life." You have to look at it this way or you might indeed give up.

Helping Teachers Teach

Teaching by setting up a classroom that invites children to learn, teaching by developing a curriculum out of the children's immediate environment, is an art that takes insight, knowledge, and many years of experience to perfect. Very few teachers are trained to teach this way. Even if they were, they would need help and support, especially during their first years of teaching. The short apprenticeship of student teaching, even at its best, does not prepare teachers for all the things they

have to do when they are suddenly alone in charge of a group of children. Teaching is the only profession in which beginners are on their own as soon as their formal training is completed; they are expected to perform like a veteran with 20 years of experience. Sometimes older teachers help beginners and sometimes principals give support, but there is no built-in mechanism for the continuing education of young teachers. Many times, beginning teachers suffer from feelings of failure, frustration, and great isolation.

There is a great deal of waste in the teaching profession. The system does not make use of the skills that master teachers have acquired, and many creative teachers leave the classroom to move into jobs where their expertise is of no use. (At Mountain View Center we are experimenting with a small pilot program: The school district is releasing a few experienced teachers one afternoon a week to work as apprentice advisors with beginning teachers. Although this program has only been in operation for about three months, the apprentice advisors have received more requests for help than they have time for.)

Inservice education as it exists today does not generally meet the needs of most teachers. If we want to improve the quality of inservice education, we must learn to differentiate among the needs of teachers. They are not a homogeneous group and their needs for additional training and support differ greatly. Although talking about "stages of development" tends to set up artificial categories, it can be useful in giving a general picture of movement and growth. I have worked with teachers in Boulder for nearly six years, and I have observed roughly three overlapping stages. (I am talking only about the teachers who have come

to Mountain View Center voluntarily and who have asked staff for help in their classrooms, presumably because they were in agreement with our basic philosophy.) Each stage requires a different kind of help.

1. Beginnings: (The "beginning" teacher here may be a first- or second-year teacher, or an experienced teacher who wants to change and try a new approach.) The main concerns at this stage are about classroom management and organization. In an "open" classroom, organization and provisioning take an enormous amount of initial work. Teachers often have to replace desks with tables, cabinets, and open shelves (some of which they must build themselves); they must create more space for work and storage, and rearrange their rooms to have separate areas for different activities. They need quantities of nonstandard materials for children's varying interests. I have spent many hours helping teachers with "room arrangement" to create a set-up in which children can work independently with well-organized, accessible materials.

Teachers must have practical help at this stage. If the room has to be changed, they need someone to help them change it. If they want to try new materials, they need someone to show them how to set things up. If they want help with record-keeping, they should be able to see the systems other teachers have worked out. Advisors must be available when teachers need them (timing can be crucial), and they must be willing to "pitch in," to get materials, to set up for activities, to do everything possible to help make the classroom function so that teachers can get some sense of success and have the satisfaction of seeing that there is a payoff for all the additional work.

I recently asked a teacher, an experienced "beginner," what had been

most helpful in my working with her. She replied:

> The thing that I found most helpful was that you'd make a suggestion, like we could visit the concrete plant, and then you'd say: I'll go with you to check it out. So often teachers need a hand. Or you'd say: I'll call this guy and then I could follow up on it. It was this kind of thing, this little extra sort of aid that is so hard for teachers to get . . . The most important thing was the initiative you took.

When beginning teachers ask for help with subject matter, advisors must be very sensitive. Too many new ideas, however well-intended, can be overwhelming. I remember an episode from my own teaching: I was feeling depressed about the way things were going in my class, and I asked for help. A science specialist gave me many good suggestions, but after she left I felt like crying. I could not perceive her suggestions as help. I saw them as just more things I had to do on my own--more stuff to get, organize, and manage, more to learn about, more to cope with--when I was already feeling overwhelmed. The advice was well intentioned and I had asked for it, but I was not able to use it at that time.

Subject-matter learning, however, whether it is working with materials or investigating the environment, should be part of beginning teachers' inservice work so that they can get involved with the materials children are working with and can begin to use the environment for explorations.

Help with organizational problems could well be given by many experienced teachers if they were freed to do this kind of advisory work. Teachers also need to be able to visit each other's classrooms and have officially sanctioned time to talk with other teachers. "Talking and thinking things out together are not valued," a teacher told me recently;

"Sharing your ideas is not considered a legitimate activity for an inservice day." There are some school systems that are moving in this direction--giving teachers one day a month and trusting them to spend it as they wish--but we are still a long way from having such ideas generally accepted.

2. New Ideas, Materials, and Activities: At this stage, "how" questions are asked less often about classroom organization and overall approach to teaching and more often about some of the materials and activities to which teachers have been introduced at Mountain View Center workshops. Children may be seen working with balancing apparatus, batteries and bulbs, stream-tables, or simple photographic equipment, and they may take trips into the school neighborhood. There is a fair degree of informality in the classrooms, and both teachers and children enjoy their work. But teachers still want practical help. A teacher said to me:

> A lot of consultants tell you what you could do but they don't help you to do it. They assume that because you've been a teacher, you know how to do these things. But that's not true at all, you don't know how to do it, you aren't sure how to approach it.

Teachers also frequently ask for help in integrating these concrete materials with the more traditional "skill" subjects so that the work with materials will not remain isolated from the work with language and mathematics. Because "second-stage" teachers are not struggling for survival--some of them have been successful traditional teachers for many years--advisors must be able to work within the existing structure of these classrooms and adapt to the personal style of individual teachers. This may require that the advisor make one or two visits to a classroom

to see how it is arranged, to get a "feel" for the normal flow of the day, and to observe how teacher and children interact. I have learned to keep such initial visits very low-keyed because teachers often feel anxious when an advisor first comes to visit. I always get involved with children when I go to a classroom--whether I have planned to do so or not. It is probably helpful for teachers to see that you know your trade. /cf. Katz's observations about "the need to establish credibility of expertise farily early in the advisor-teacher relationship" (1974, p.155)/

Sometimes teachers are intimidated by Mountain View Center's rich environment and hesitate to ask for help. I once offered to visit a teacher who had come to browse at the Center. "Oh, I wouldn't want you to come into my room," she said; "I'd be embarrassed. I'm always terribly embarrassed when people come out from the East /where she went to school/ and want to visit me." It is important to be aware of such feelings and to reach out and reassure these teachers that you are not coming to judge or evaluate them.

Specialist and generalist advisors help in somewhat different ways. The former offer mostly "technical assistance" in their area of expertise--e.g., how to wire a model city, how to start a weaving project, how to set up a darkroom in class, and so on. The latter use their subject-matter know-how, but they also help to integrate new activities and materials into the existing classroom structure, and if necessary, they work toward changing this structure.

3. "Extending"--Developing Your Own Curriculum: Teachers at this stage are generally comfortable in their role. They have good classroom

organization and plentiful materials, and children are interested and involved in their work. The teachers are becoming aware, however, that they could be doing more to extend children's learning. They are looking for greater depth and diversity and more continuity in children's work.

Before teachers can extend children's learning, they must have experienced this process in their own work. Mountain View Center workshops try to give teachers the opportunity. Here is an excerpt from the journal of a teacher who attended one of our summer courses and who, as she said, "became aware of the importance of working through an experience." The general topic of her study was weather.

> We began this morning with various sized flasks filled with water. Tons of questions came up. Which magnifies the greatest? Which will heat the fastest and why? Which will light a match the fastest? Which will burn paper? What would be the effect of putting India Ink in the water? What would be the effect of placing foil behind a flask? There are endless possibilities which these questions could lead to. Each person picked up on something different. I was interested to see which flask would heat the fastest. From this question I became interested in how much the temperature varies from the sunlight to the shade and if different surfaces are a major factor. I placed eight thermometers (80°) on various surfaces in the sunlight and shade. The temperature was consistent in the shade but there was a great variety of readings in the sun. I began to wonder how the color of a surface affects the temperature and decided to test this with colored paper. I really became aware of the importance of working through an experience. The process is "where it's at."

Teachers who want help with extending seem to know that something is missing from their program, but they are not always sure what it is. I myself realized only recently that what I had called "extending" is in fact curriculum-building. Preservice education generally does not prepare teachers for this task. "I've never developed my own curriculum,"

a competent third-grade teacher said to me as we were planning social studies activities for her group. And a sixth-grade teacher, wanting to develop a social studies curriculum that would be meaningful to the children in her mountain community, said: "I don't just want to go through the textbook," but she too did not quite know where or how to begin.

When teachers have experienced learning in some depth at their own level, when they have solid knowledge of both child development and subject matter and use it as the basis for their planning, they are ready to extend children's learning and to build their own curriculum. Here again they will need help in the classroom. One of the teacher-advisors mentioned earlier said to me:

> If you're trying something new you have never done before, you need help. I'll need substantial help. I need to talk about ideas, and possibilities, I need somebody there working with me, to see what's useful, what's not useful, to see if my feelings are accurate. I need someone who is at least where I am.

Working with teachers at this stage of development is challenging, exciting, and very satisfying. We work as colleagues, learning from each other and, as always, from the children.

Inservice education must provide for the continuing growth of teachers at all levels of experience and maturity. If the most experienced teachers are shortchanged, as so often they are because their problems seem less urgent, school systems will continue to lose their potential educational leaders.

Social Studies Explorations: Some Examples

When I first went to Boulder, I spent much time helping teachers

with organizational matters, and I also encouraged them to take trips with the children into the immediate school environment (I was trying to bring Bank Street's social studies to Boulder). I taught a workshop course entitled "Exploring the Urban Environment" that I hoped would help me get to know my new community as well as help teachers get acquainted with the resources of their city. One of the places we visited was Boulder's Sewage Treatment Plant. On our return to the Center, I described to a visiting biologist how the partially treated sewage was slowly sprinkled over a large round bed of algae-covered rocks. "The algae eat the bacteria and then the effluent is returned to the stream," I said, quoting our guide at the plant. "Algae don't eat bacteria," the biologist said with authority. Noting our confusion, he offered to work with us, and two very informative lab sessions on bacteria were inserted into my course. (When you are not restrained by time limits or by a syllabus that must be covered, you can afford to explore related subjects to broaden your understanding.)

This was the first time I saw how social studies explorations can lead into science. Since then I have found that teachers' and children's questions, both in the classroom and on field trips, often touch on some aspect of science, and I have become aware of how my own scientific ignorance limits the help I can give in this area. Social studies can be greatly enriched if the natural connections with science are picked up and extended. Adding science "increases the surface area" of social studies, as Hawkins might say. That is, more children will be able to find starting points of interest to them if the topics for investigation are not restricted by artificial subject-matter divisions. By having

access to the expertise of scientists, I can help teachers incorporate science into the ongoing daily classroom work. Both children and teachers benefit.

I think teachers should always be able to draw on different resource people and that learning from such people, whether they are scientists, crafts people,local historians, or just generally knowledgeable residents of the community, should be viewed as acceptable in service work.

In "What It Means to Teach" Hawkins described teaching as a repeated cycle of "diagnosing, designing, responding, and then rediagnosing from failure or from a child's confirmation of success" (1973, p. 14). What does it mean in practical terms to diagnose, design and respond? I will try to illustrate this process with an example from my work.

A second-grade teacher had asked me for help with her social studies program. We planned some explorations within the school building that were to lead to beginning mapping. The children did some nice block-building, but J., the teacher, complained that they were driving the toy trucks down the school corridor. That day, when I had driven to the school, I had noticed some machinery on a dirt road alongside the playground. Since J. had given me a "cue" about the children's interest, I suggested that the road work might be a suitable topic for study. J.was interested and during her lunch break we went out to talk to some of the workers. We learned that the road was going to be graded and paved with asphalt and that a concrete storm sewer would be constructed at the intersection near the school. We found out who was in charge of the work and asked about the names of some of the machines. Later in the

afternoon we took a group of children to watch dump trucks and graders at work. That was the beginning of a study that continued for about two months. Because there were long pauses between the different phases of the work, J. asked the teachers whose classrooms faced the road to alert her when something of interest was happening. Whenever a messenger arrived in her room with news of impending action, J. dropped what she was doing in the classroom and took the children out to the road.

When we first watched the dump trucks, some children wondered where the "dirt" came from. We asked the driver and learned that he picked up his loads at a nearby gravel mine. I arranged a visit to this gravel mine with J. after school. We were given a tour of the plant and found the operation fascinating. We planned a trip with the children, which was a great success.

After the road was graded, a water truck wetted the loose dirt and a roller packed it down. The workers explained to the children why this had to be done before the asphalt could be poured. New questions were asked now: What is asphalt? Where does it come from? How is it made? J. and I made an appointment for another after-school visit, this time to the asphalt plant, and again we arranged a trip for the children so they could see how and where asphalt was made. Because of changes in the construction schedule, we went to the plant before "our" road was paved. When the trucks with the hot asphalt finally arrived, excitement was high. Teachers and children spent almost the whole morning outside, watching the work.

During all this time, many of the classroom activities revolved around the roadwork. There was much writing, drawing, painting, and

blockbuilding, work with science and math, and many good discussions about machinery, raw materials, and work processes. Children sifted and sorted aggregate brought back from the gravel mine, made a large mural of the various stages of the road work, constructed a simple conveyor belt in the block corner, and so on. They were involved and were learning on many different levels.

J.'s own learning was also impressive. Much of her previous teaching had been in brief units. At the end of this experience, we planned to shift our focus to a nearby construction project and to use it as a new, though related starting point. As we talked, J. suddenly exclaimed: "We've got the whole year laid out!" and then she added: "The fun part of working this way is that teachers can have fun too."

How did we develop this curriculum? As Mitchell said, we placed the children in "strategic positions for making explorations." We listened to their questions and planned opportunities that would help them find answers. We "diagnosed, designed and responded." Working in this way, you never plan for a definite outcome. You have a starting point--in this case the roadwork near school--and some general goals--e.g., to show where raw materials come from and how machines can change these raw materials, to observe how much planning and work goes into the paving of one block of road--but you never know exactly what will interest individual children; therefore, you cannot decide in advance what they will learn.

When an activity has worked well with a group of children, there is the temptation to write it up for others, to "package" it for wider consumption. A nice primary text could be made from our experience, with

photographs of all the work we observed, but if another group of second graders were given this book for study, they could never get as involved or as interested as the group we worked with. Children at this age must have concrete experiences that relate to their own lives. Describing what worked with one group of children as an example of useful classroom work can be helpful to others as long as it is not intended as a model to be copied. Curriculum developers should produce more resource books for teachers with background information on many different subjects. If J. and I had had a book with names and pictures of the different machines we saw on the road, information on different road surfaces and the manufacture of asphalt and concrete cement, an account of the history and economics of road construction and statistics on roads in the US, it would have been very helpful.

Texts can never take the place of first-hand experiences for young children. A curriculum developed by adults for children cannot respond to children's questions, and it is only when children are seeking the answers to their own questions that they will begin to learn. The questions you ask depend on your prior experiences. I have taken three trips with different groups of teachers to the Boulder Water Treatment Plant, and each time I have had different questions. The first time my main interest was general: Where does the water come from? How is it treated? How is it distributed to the homes of the city? My second visit took place after a trip to the Sewage Plant, and this time I became interested in the fact that drinking water becomes sewage, is treated at the sewage plant, from which it is returned to Boulder Creek to become the drinking water of the next town, where it is treated again, and so on, all the way

down to New Orleans. How often can water be "treated" and still remain water? I wondered. Two years later, on my third visit, I had a completely different question: How is water pressure reduced? I knew there are transformers that reduce electric voltage, but I became fascinated by the fact that water builds up tremendous pressure as it descends 7,000 feet from the glacial lakes and that this pressure has to be reduced before the water can be piped into homes. After each trip I wanted to find the answers to my questions only.

C., a teacher who has taken many courses at Mountain View Center, understands this process well. "You never plan for questions," she said to me recently as we were discussing curriculum planning. "When the children ask questions, that's when you go to work. The more experience you provide, the more questions are going to come up."

C. is an experienced first-grade teacher who provides well for her children. A year ago, however, she felt that something was missing from her class and that the children's activities were not sufficiently connected with their lives outside school. We worked together for over a year and developed a social studies curriculum that provided a framework for learning in all subject areas and was meaningful to children at that age. It is a rich story that I can summarize only briefly here.

First we wanted the children to get to know each other, to learn to care for each other and to accept and value individual differences. We knew that such things can never be taught and that a classroom with interesting materials and varied activities is a necessary prerequisite for a good life in school. But we wanted to have some activities that would involve all the children and bring them closer together. Because

C. liked group discussions and wanted to become more comfortable leading them, we decided to start there.

Early in the school year we had many discussions on subjects related to the children's lives--their homes and rooms, their families, their parents' work, pets and toys and TV programs, favorite foods, trips to visit relatives, and so on. During this time I suddenly realized that I was telling C. to listen to the children and to take her cues from what they were saying but I was not helping her learn how. We began to tape-record the discussions so we could analyze them afterwards. As we listened to the tapes, we noted what questions children asked, what comments they made, and how and when we responded. C. learned to really listen and tune in to the children's thinking. At the end of the school year, she described her learning:

> We started talking about the kids and where they are and what they bring to school. Before I really assumed a lot. Then we talked about how far back you have to go and how you can't assume so much and I began to think about that when I was planning. Now I don't assume anything and I'm giving the kids a chance to talk. Sometimes it seems as if they do understand but as they talk more and more, they have so many questions. Also, before I wanted end-products. I was concerned with the process and going through the whole thing but I wanted something nice at the end. Last year, the end product didn't matter any more. I got involved in what was going on while working with the kids and I let them do the whole thing, even if the end product didn't turn out to be something "nice" that I could put up.

Later in the year, we planned walking trips for small groups of children to visit their homes. We noted how we got there, compared building styles and materials, and did some very elementary mapwork in the block area. C. also asked parents to come to her class. Some brought younger siblings along, some came to talk about their work, and some just

visited and joined in the activities with the children. Then we planned a series of trips into the community to visit parents at work. These visits took us to a local brick factory, a beauty shop, a hospital, a pumpkin farm, a tea company, and the fire station. The trips were particularly exciting for the children who saw their parents, but the places of work were also interesting places to visit in themselves and provided meaningful connections between the classroom and the outside world. Throughout the year, the content of much of the children's work in language, art, and science related to these trips, and often work in the classroom led to further explorations in the environment.

When we went to the brick factory last year--a particularly exciting trip because the children can observe the whole process of brick manufacture--C. thought that follow-up activities would take about a week or two. However, as we started talking about all the different aspects of brick making--how the raw material is changed from dry clay to wet clay to large molded rectangular chunks of clay, to individual bricks that are air-dried and kiln-dried and then cooled--and as we recalled the sounds of the machines and the heat of the kiln and the many different jobs of the people we saw, we realized that there was enough content for many weeks of learning. This year C. decided to take her class to the brick factory early in the year so that she would have ample time to pick up on children's questions in the classroom, plan other related trips, and if necessary, return to the brick factory with groups of children who wanted to go again to concentrate on special aspects of the work.

Last year, C. clarified her thinking about general goals for her

first-grade class and also began to plan for individual children's needs. This year, her curriculum will give children a better understanding of how man uses his environment and how he changes the earth for his needs.

I have given two examples of how I have developed curriculum with teachers. It is exciting to work in classrooms, with teachers and children, exploring the world together, but it is difficult to put this experience into words. When C. described her learning when studying weather (p.23), she concluded: "The process is where it's at." I agree. Because I find the process of working in schools so rich and satisfying, I have tried to share it with others.

Concluding Comments

"How is curriculum development related to the professionalization of the teacher's role?" is the question I was asked to discuss. I believe that we need to change our perception of the teacher's role before there can be any significant change. As long as teachers are regarded as implementers of a curriculum designed by others rather than as initiators and developers of their own curriculum, as long as they remain at the bottom of the educational hierarchy and do not have a voice in larger decision-making, as long as they are not trusted to plan for the particular children in their classes, the teacher's role will not be "professionalized."

Teaching, as I have described it, demands intelligent, creative, and sensitive individuals who will approach their task with energy and compassion and who will be committed to their own continued learning and growth. Not many such individuals choose to stay in the classroom. Only when teachers are given full responsibility for their job and learn to take this responsibility will teaching become a respected profession.

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